UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/099,632	06/18/1998	THOMAS I. INSLEY	53634USA8A	5447

7590 12/31/2001

KARL G HANSON
3M OFFICE OF INTELLECTUAL PRPPERTY
COUNSEL
P O BOX 33427
T PAUL, MN 551333427

EXAMINER
LEO, LEONARD R

ART UNIT	PAPER NUMBER
3743	24

DATE MAILED: 12/31/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/099,632	Insley et al.
Examiner	**Art Unit**
Leonard R. Leo	3743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Oct 5, 2001*.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-25, 31, 32, and 34* is/are pending in the application.

4a) Of the above, claim(s) *6-8, 11, and 25* is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-5, 9, 10, 12-24, 31, 32, and 34* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
18) ☐ Interview Summary (PTO-413) Paper No(s). _____
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

DETAILED ACTION

Claim 33 is cancelled, claims 1-25, 31-32 and 34 are pending, claims 6-8, 11 and 25 remain withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 21, 31-32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips et al (Figures 1-3, column 2, lines 14-19).

Phillips et al discloses all the claimed limitations except the first layer being a polymeric film material.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a polymeric material for the first layer, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. With respect to a film, it would have been obvious to one of ordinary skill in the art to employ a plate having any desired thickness to achieve a desired heat exchange or pressure strength.

Regarding claim 31, the recitation of "microreplicated" is considered to be a method limitation in an apparatus claim, which bears no patentable weight in this instance.

Regarding claim 32, the claimed limitations are met by *In re Leshin* above. The choice of a known material and its inherent physical properties, such as thermal conductivity, requires only routine skill in the art.

Regarding claim 34, the claimed limitations are met by *In re Leshin* above. The choice of a known material and its inherent physical properties, such as ductility or flexibility, requires only routine skill in the art.

Claims 1, 21-23, 31-32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bae (Figures 2-3, column 5, lines 22-24 and column 6, lines 13-14).

Bae discloses all the claimed limitations except the first layer being polymeric film material.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a polymeric material for the first layer, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. With respect to a film, it would have been obvious to one of ordinary skill in the art to employ a plate having any desired thickness to achieve a desired heat exchange or pressure strength.

Regarding claim 31, the recitation of "microreplicated" is considered to be a method limitation in an apparatus claim, which bears no patentable weight in this instance.

Regarding claim 32, the claimed limitations are met by *In re Leshin* above. The choice of a known material and its inherent physical properties, such as thermal conductivity, requires only routine skill in the art.

Regarding claim 34, the claimed limitations are met by *In re Leshin* above. The choice of a known material and its inherent physical properties, such as ductility or flexibility, requires only routine skill in the art.

Claims 1-5, 9-10, 12-23, 31-32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosman et al in view of Bae.

Rosman et al discloses all the claimed limitations except a film and a specific hydraulic radius and channel length to hydraulic radius aspect ratio.

Bae discloses s heat exchanger comprising a first layer 31b having a plurality of flow channels 30 and a cover layer 31a; wherein the channels have a hydraulic diameter of about 0.01 to 0.02 inch (where hydraulic radius is half of the hydraulic diameter, 0.005 to 0.01 inch or 127 to 254 μm) and an aspect ratio of about 10 to 1200 for the purpose of achieving a desired heat exchange.

Since Rosman et al and Bae are both from the same field of endeavor and/or analogous art, the purpose disclosed by Bae would have been recognized in the pertinent art of Rosman et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Rosman et al a hydraulic radius of about 127 to 254 μm

and an aspect ratio of about 10-1200 for the purpose of achieving a desired heat exchange as recognized by Bae. With respect to a film, it would have been obvious to one of ordinary skill in the art to employ a plate having any desired thickness to achieve a desired heat exchange or pressure strength.

Regarding claim 14, cross flow is a well known alternate of parallel flow.

Regarding claims 15-20, as applied above, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claim 31, the recitation of "microreplicated" is considered to be a method limitation in an apparatus claim, which bears no patentable weight in this instance.

Regarding claim 32, the claimed limitations are met by *In re Leshin* above. The choice of a known material and its inherent physical properties, such as thermal conductivity, requires only routine skill in the art.

Regarding claim 34, the claimed limitations are met by *In re Leshin* above. The choice of a known material and its inherent physical properties, such as ductility or flexibility, requires only routine skill in the art.

Claims 14 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosman et al in view of Bae as applied to claims 1-5, 9-10, 12-23, 31-32 and 34 above, and further in view of Schubert et al.

The combined teachings of Rosman et al and Bae lacks perpendicular flow channels in adjacent layers.

Schubert et al discloses a heat exchanger comprising a plurality of layers having a plurality of flow channels 14d; wherein the flow channels in adjacent layers are perpendicular for the purpose of achieving a desired heat exchange.

Since Rosman et al and Schubert et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by Schubert et al would have been recognized in the pertinent art of Rosman et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Rosman et al perpendicular flow channels in adjacent layers for the purpose of achieving a desired heat exchange as recognized by Schubert et al.

Regarding claim 24, Figure 4 of Schubert et al discloses an upper cover layer forming the flow channels 14b with a lower first layer in indirect heat exchange relationship with the upper adjacent flow channels.

Response to Arguments

The rejections under 35 USC 112 are withdrawn.

Applicants' amendment to claim 32 is supported on page 10, lines 6-9 of the specification.

Applicants' remarks with respect to the term "microreplicated" support the Examiner's position. The term refers to the manufacturability of a desired material. Arguendo, if the

material is being claimed, the inherent physical properties affect the tolerance, not the manufacture of the material. Furthermore, the claimed limitation does not structurally define over the prior art of record.

Regarding applicants' remarks with respect to *In re Leshin* are mistaken. While the particular case involved a plastic material, it is clear that choice of a known material, such as a ***heat conductive material*** involves only routine skill in the art. Clearly, it is well known in the art to manufacture heat exchangers composed of ceramic, metal, non-metal, plastic, etc. As claimed,"the heat exchanger" may be employed in any desired environment with a desired working fluid. The recitation of "for use with active fluid transport" is considered to be a statement of intended use, even if claimed, does not merit patentable weight unless the body of the claim refers back to, is defined by, or otherwise draws life and breadth from such intended use. One of ordinary skill in the art would clearly recognize the suitability of certain materials in certain working environments. Therefore, the patentability of the instant invention as claimed cannot hinge on the choice of material employed, especially when the claimed structural limitations are met by the prior art.

Regarding applicants' remarks with respect to the combination of Rosman et al and Bae, Rosman et al discloses a polymeric material as claimed. The secondary reference of Bae teaches the hydraulic radius and aspect ratio as claimed, which applicants do not dispute. Clearly, one of ordinary skill in the art would employ the teachings of Bae to achieve optimal heat exchange in the device of Rosman et al. This ordinary skill is further demonstrated in

Rosman et al (column 8, lines 41-45), which applicants dismiss as "a general, cursory statement." While the disclosure of Rosman et al in this respect does not disclose applicants' specific quantitative claim limitations, it clearly sets forth the level of ordinary skill in the art. Applicants' claimed quantitative limitations are not novel and unobvious as demonstrated by Phillips et al and Bae. The recitation of a "film" is merely a term intimating a relative dimension. However, if not claimed in some manner, the dimensional relations are believed to require only routine skill in the art. One of ordinary skill in the art recognizes that employing a desired material thickness affects heat exchange, structural strength and rigidity. Lastly, the patentability of the instant invention as claimed does not rely upon the use of a novel polymeric material. Again, ***Rosman et al discloses a polymeric material as claimed.***

The rejections in view of Schubert et al are deemed correct for lack of any arguments by applicants, other than standing or falling with the rejections in view of Rosman et al and Bae.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory

period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry of a general nature, relating to the status of this application or clerical nature (i.e. missing or incomplete references, missing or incomplete Office actions or forms) should be directed to the Technology Center 3700 Customer Service whose telephone number is (703) 306-5648.

Any inquiry concerning this Office action should be directed to Leonard R. Leo whose telephone number is (703) 308-2611.

Leonard R. Leo

LEONARD R. LEO
PRIMARY EXAMINER
ART UNIT 3743

December 31, 2001